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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/533,855

05/04/2005

Martin Robson

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EXAMINER

HSIAO, JAMES K

ART UNIT

PAPER NUMBER

3683

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/02/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/533,855

Applicant(s)

ROBSON ET AL.

Examiner

James K. Hsiao

Art Unit

3683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 5/4/05 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/31/06</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because the reference numbers referencing the eccentric are not clear. It is unclear what reference numbers are for what elements. For example, reference number 42 eccentric seems to point to nothing. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

Art Unit: 3683

2. The abstract of the disclosure is objected to because there is no mention of "the outer gears" as claimed. Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims **1-7, 19, 20, 21, 23-25, 26-28** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 7, and 19, lines 13-15, recite "one of the eccentric and first outer gear forming an **input** to the orbital transmission, and one of the second outer gear and eccentric respectively, forming an **output** from the orbital transmission". It is unclear whether the eccentric is intended to form both the input and the output of the orbital transmission, as claimed. For the purpose of applying the below art rejection, examiner interprets the eccentric as being intended for forming both the input and output of the orbital transmission.

Regarding claims **11 and 23**, the claims recite the term "internal teeth", the teeth are not on the inside the gear according to the drawings (figure 1, 30).

Claim **4** recites the limitation "the spur gear" in lines 4-6. There is insufficient antecedent basis for this limitation in the claim.

Regarding claims **12 and 24**, the phrase "could" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims **1, 2, 9, 19, and 21** are rejected under 35 U.S.C. 102(b) as being anticipated by Belmond (US-5590744)

Regarding claims **1 and 19**, Belmond discloses an actuator including: an electric motor (**figure 6,116a**) having a motor output; an orbital transmission having: an eccentric (**figure 6,126**); a first orbit gear (**figure 6,124**) mounted on the eccentric; a second orbit gear, (**figure 6, next to 124**), mounted for rotation on the eccentric and fixed to the first orbit gear; a first outer gear (**figure 6,115**) for meshing with the first orbit gear; and a second outer gear (**figure 6, 102**) for meshing with the second orbit gear; one of the eccentric and first outer gear forming an input to the orbital transmission, and one of the second outer gear and eccentric respectively, forming an output from the orbital transmission; and an output member (**figure 6,103c**) coupled to the output of the orbital transmission for applying a load.

Regarding claim **2, 9, and 21**, Belmond discloses wherein the eccentric forms the input (**figure 6,126**) to the orbital transmission and the second outer gear forms the output from the orbital transmission (**figure 6,102**).

7. Claims **1, 2, 5, 9, 15, 19, 21 and 27** are rejected under 35 U.S.C. 102(b) as being anticipated by Spanski (US-5102377).

Regarding claims **1 and 19**, Spanski discloses an actuator including: an electric motor (**10**) having a motor output; an orbital transmission having: an eccentric (**20**); a first orbit gear (**28a**) mounted on the eccentric; a second orbit gear, (**28b**), mounted for rotation on the eccentric and fixed to the first orbit gear; a first outer gear (**30a**) for meshing with the first orbit gear; and a second outer gear (**30b**) for meshing with the second orbit gear; one of the eccentric and first outer gear forming an input to the orbital transmission, and one of the second outer gear and eccentric respectively, forming an output from the orbital transmission; and an output member (**38**) coupled to the output of the orbital transmission for applying a load.

Regarding claims **2, 9, and 21**, Spanski discloses wherein the eccentric forms the input (**20**) to the orbital transmission and the second outer gear forms the output from the orbital transmission (**38**).

Regarding claims **5, 15, and 27**, Spanski discloses wherein a housing (**40**) and first input gear (**30a**) are fixed stationary relative to the input shaft (**16**) and the eccentric (**20**) and provide a control gear (**36**) so that when the eccentric is rotated, the first orbit gear is caused to execute an orbit, which in turn causes the second orbit gear to

Art Unit: 3683

execute an orbit, and the meshing of the second orbit gear with the second output gear, rotates the second output gear, to in turn rotate a kidney pulley.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims **3, 8, 13, 18 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Belmond (US-5590744) in view of Wang (US-6907959).

Regarding claims **3, 13, and 25**, Belmond disclose as set forth above in section 6 but lack a kidney pulley. Wang teaches an output member that comprises a kidney pulley (**figure 2**) coupled to the output (**figure 4**) of the orbital transmission, the kidney pulley receiving a cable (**figure 2, 18**) so that upon rotation of the kidney pulley in one direction, a load is applied to the cable, and upon rotation of the kidney pulley in the opposite direction, the load is released from the cable (**col. 1, lines 36-39**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the kidney pulley of Wang with the actuators of Belmond because the kidney shape of the pulley reduces the stress on the cable by changing the point of stress from one point on the cable to a large surface area.

Regarding claim **8**, Wang teaches a control section that causes the actuator to apply or remove the load required to move the brake cable (**col. 1, lines 62-67**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the control means of Wang with the actuator of Belmond because it is necessary for a control means to make suitable adjustments for braking force, cable wear, and brake lining wear.

Regarding claim **18**, Belmond disclose actuators with transmissions and electric motors but lack the braking system and cable connected to the braking system. As set forth above, Wang teaches a brake system including a cable, a brake actuator, an output and an output pulley.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the actuators, transmissions, and electric motors of Belmond with the brake system including a cable, a brake actuator, an output and an output pulley of Wang because it uses rotational force directly to apply the load to a cable and therefore negates any transitional losses due to friction and rotational to linear change of motion.

10. Claims **3, 8, 13, 18 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Spanski (US-5102377) in view of Wang (US-6907959).

Regarding claims **3, 13, and 25**, Spanski disclose as set forth above in section 7 but lack a kidney pulley. Wang teaches an output member that comprises a kidney pulley (**figure 2**) coupled to the output (**figure 4**) of the orbital transmission, the kidney pulley receiving a cable (**figure 2, 18**) so that upon rotation of the kidney pulley in one



Art Unit: 3683

direction, a load is applied to the cable, and upon rotation of the kidney pulley in the opposite direction, the load is released from the cable (**col. 1, lines 36-39**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the kidney pulley of Wang with the actuators of Spanski because the kidney shape of the pulley reduces the stress on the cable by changing the point of stress from one point on the cable to a large surface area.

Regarding claim **8**, Wang teaches a control section that causes the actuator to apply or remove the load required to move the brake cable (**col. 1, lines 62-67**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the control means of Wang with the actuator of Spanski because it is necessary for a control means to make suitable adjustments for braking force, cable wear, and brake lining wear.

Regarding claim **18**, Spanski disclose actuators with transmissions and electric motors but lack the braking system and cable connected to the braking system. As set forth above, Wang teaches a brake system including a cable, a brake actuator, an output and an output pulley.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the actuators, transmissions, and electric motors of Spanski with the brake system including a cable, a brake actuator, an output and an output pulley of Wang because it uses rotational force directly to apply the load to a cable and therefore negates any transitional losses due to friction and rotational to linear change of motion.

11. Claims **4, 7, 10, 14, 17, 20, 22 and 26** rejected under 35 U.S.C. 103(a) as being unpatentable over Spanski (US-5102377) and in view of Belmond (US-5590744).

Regarding claims **7 and 20**, Spanski discloses as set for the above in section 7 but lacks a spur gear arrangement between the motor output and the transmission input. Belmond teaches a spur gear (**figure 6, 124**) arrangement between the motor output (**figure 6, 110**) and the input of the orbital transmission, and including a spur gear (**figure 6, 102**) coupled to the input of the orbital transmission (**figure 6, 103**), and a pinion gear system (**figure 6; 115, 124**) meshing with the spur gear and driven by the motor output of the electric motor.

Regarding claim **4 (as best understood), 14, and 26**, Spanski discloses wherein the first outer gear is arranged in a gear housing (**40**), the housing receiving an input shaft (**16**), which couples with the eccentric (**20**). Spanski lacks the spur gear connected to the motor that drives the input of the transmission. Belmond teaches wherein the input shaft (**figure 6, 103c**) is mounted to the spur gear (**figure 6, 102**) so that upon rotation of the spur gear, the input shaft and the eccentric are rotated.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the spur gear arrangement of Belmond with the transmission of Spanski in order to decrease the length of the actuator and save space.

Regarding claims **10 and 22**, Belmond teaches wherein a pinion gear system comprises a first pinion (**figure 6, 115**), mounted on the motor output, and a second pinion (**figure 6, 124**) in mesh with the first pinion, and the second pinion meshing with the spur gear (**figure 6, 102**).

**Regarding claims 12 and 24**, Belmond teaches wherein a single pinion **could** be mounted on the motor output and meshing with the spur gear.

Regarding claim **17**, Spanski discloses as set forth above in section 7 but lack as a side-by-side orientation. Belmond teaches wherein the motor (**figure 5, 16**) and the transmission (**figure 5, below 16**) are arranged in a side-by-side relationship (**figure 5**) within the casing (**figure 5, 1**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the actuator orientation of Spanski with the orientation of Belmond because it is more compact and reduces the space needed.

12. Claims **6, 16 and 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Spanski (US-5102377) and in view of Belmond (US-5590744) of Gill et al. (US-6533082).

Regarding claims **6, 16 and 28**, Spanski discloses as set forth above in section 7 but lacks a sensor for sensing rotary movement. Gill et al. teaches at least one sensor (**cols. 4-5, lines 65-5**) for sensing rotary movement of the second output gear (**col. 5, lines 3-5**), and therefore rotary movement of the kidney pulley.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the sensor of Gill et al. with the Actuator of Spanski of in order to have a reference to use when controlling the apparatus.

### **Conclusion**


Art Unit: 3683

13. The following patents and publications were used during examination however not used for rejection. Hanna et al., Schumann, Deane, and Louton all disclose orbital transmissions. Bohm et al. discloses a system for controlling or adjusting an electromechanical brake. Hagiike, and Drennen et al., disclose parking brake apparatuses.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James K. Hsiao whose telephone number is 571-272-6259. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James S. McClellan can be reached on 571-272-6786. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
JAMES MCCLELLAN  
SUPERVISORY PATENT EXAMINER  
2/22/07